

## **REMARKS**

Claims 1-34 are pending in the application.

Claim 1 has been amended to include the limitation that the conductive region is adapted to "provide a resistance arranged to substantially match the wave impedance of an electromagnetic field that would otherwise be expected to exist in the package if the conductive material were not present". Basis for this can be found on page 4 lines 12-14 of the PCT publication. Independent claims 15, 18, 19, 28 and 34 are similarly amended above.

No new matter is added to the specification or claims by these amendments.

## **TRAVERSE OF THE OBVIOUSNESS REJECTIONS**

### **A. The Rejection Of Claims 1, 5-6 And 8-22**

Claims 1, 5-6 and 8-22 stand rejected for obviousness over Choon et al (USP 5,608,188) in view of the Izzat et al article (Izzat). The rejected claims include independent claims 1, 15 and 18-19. It is the examiner's position that Choon discloses all of the features of the rejected claims except for a conductive material that is partially absorbent to electromagnetic radiation (claims 1 and 19) or a conductive material comprising Nichrome or carbon (claims 13-14). It is the examiner's further position that Izzat discloses the use of conductive material (resistive sheets) which are adapted to dampen cavity resonance. The examiner justifies combining the references on the basis that one skilled in the art at the time of the invention would have made use of the Izzat conductive material as the conductive material of Choon for the purpose of dampening cavity resonance.

#### **1. The amended claims are non-obvious and patentable**

The amendments made to independent claims 1, 15 and 18 further differentiate the present invention from the cited prior art and cause claims 1, 5-6 and 8-22 to be non-obvious and patentable. Independent claims 1, 15 and 18-19 of the present invention have been amended above to include (inter alia) a package for a high frequency circuit, wherein the material extending into the cavity has a conductive region wherein "the resistivity is arranged to substantially match the wave impedance of an electromagnetic field that would otherwise be expected to exist in the package if the conductive material were not present". Neither cited prior art reference, and Izzat in particular, mentions tailoring the conductivity of its resistive sheets to match expected EM fields as presently claimed. The inventions now claimed in independent

claims 1, 15 and 18-19 are, therefore, an improvement over Izzat by both moving the technical field to that of electronic component packages, and simultaneously increasing the performance it would have by ensuring a good impedance match. For as least this reason, the examiner's rejection of claims 1, 5-6 and 8-22 should be withdrawn.

**2. The cited prior art does not disclose “material extending into a cavity”**

Claims 1, 5-6 and 8-22 are independently non-obvious and patentable because the cited prior art does not disclose or suggest a package including a cavity having “material extending into the cavity”. Choon in particular does not disclose any material extending into a cavity. Instead, Choon teaches, as mentioned in its abstract, *a multi-compartment* shielded box, wherein *a partition* is used to provide separate volumes within the box. Note that a “partition” is defined in the Oxford English Dictionary as "Division into two parts". The partition in Choon comports with this definition because it divides the box into two distinct parts and, in doing so, acts as another wall. Thus, the examiner's position that the Choon partition "extends into the cavity" is incorrect- it is instead another wall that is used to define two distinct cavities.

The present invention does not have a partition, and it does not compartmentalise the package as in Choon. Instead, the claimed package has a compartment in which electronic components are located. In that compartment lies, for example, a vane (10) shown in Figure 1 that extends into the cavity. Notably, vane (10) does not form a wall and its presence in the cavity does not form two separate and distinct cavities. More precisely, Choon discloses a package having two cavities. Nothing extends into any of any of the Choon cavities. This is also stated in the previous action response, and is detailed at paragraphs 5-6 of the Rule 1.312 Declaration from David Bannister submitted with the Applicant's January 22, 2010 Office Action Reply.

**3. Izzat teaches away from its combination with Choon**

Claims 1, 5-6 and 8-22 are further independently non-obvious and patentable because the cited prior art expressly teaches against the combination made by the examiner. Looking at the teaching of Izzat, page 721, in the first paragraph of the second column, it states that "... lining the walls of the cavity with resistive sheets will have a negligible effect [on the EM fields] ...". As stated above, the partition in Choon is just another cavity wall. Therefore, a person having ordinary skill in the art (PHOSITA) would see from the teaching of Izzat that using the resistive

sheets of Izzat on the partition (or any other wall) of Choon would be a pointless exercise. The combination of Izzat and Choon therefore would not have been attempted because the PHOSITA would understand that it would not be successful. For this reason as well, claims 1, 5-6 and 8-22 are non-obvious and patentable over the cited prior art.

**B. The Rejection Of Claims 1-20 And 23-27**

The examiner rejected claims 1-20, 23-27 for being obvious over Benzoni et al in view of Izzat. Of the rejected claims, claims 1, 15 and 18-19 are independent claims. As with Choon, the examiner maintains that Benzoni discloses all of the features of the rejected independent claims except for a conductive material being adapted to be partially absorbent to electromagnetic radiation. The examiner relies upon Izzat for providing this missing teaching and justifies its combination with Benzoni on the basis that one skilled in the art would apply the Izzat conductive material as the conductive material in Benzoni for the purpose of dampening cavity resonance.

**1. The amended claims are non-obvious and patentable**

As noted in Section A(1) above, independent claims 1, 15 and 18-19 of the present invention have been amended to include (inter alia) a package for a high frequency circuit, wherein the material extending into the cavity has a conductive region wherein “the resistivity is arranged to substantially match the wave impedance of an electromagnetic field that would otherwise be expected to exist in the package if the conductive material were not present”. Neither cited prior art reference, and Izzat in particular, has mention of tailoring the conductivity of its resistive sheets to match expected EM fields as presently claimed. As a result, claims 1-20, 23-27 are non-obvious and patentable over the cited prior art.

**2. The prior art does not disclose “material extending into a cavity”**

Claims 1-20 and 23-27 are further non-obvious and patentable because the cited prior art does not disclose or suggest a package including “material extending into a cavity”. Benzoni does not disclose this claim feature as the examiner maintains. Instead, Benzoni teaches a shielded housing wherein a lid shield is arranged to divide the housing into *two separate compartments*, one for a transmitter and one for a receiver. (See Rule 1.312 Declaration of David Bannister at ¶¶5-6). The Benzoni shield lid is coated with copper or other metal. (See Benzoni at column 3 lines 28-31). Copper is a highly conductive material, and so a PHOSITA would immediately realise that the idea of the shield is to prevent any radiation from passing into the

adjacent compartment. This is a standard technical objective, particularly for items such as transmitter and receiver pairs (the application mentioned in Benzoni). Based upon this understanding of Benzoni, a PHOSITA would not be motivated to increase the resistivity (i.e. decrease the conductivity) of the coating applied to this shield because doing so would tend to allow EM radiation to pass from one compartment to the other. (See Benzoni at column 2 lines 30-38 - discussing the downside of allowing the shield casing to become partly conductive). Therefore not only does Benzoni not disclose this claim feature is also teaches away from any combination with Izzat.

The arguments at Section A(3) above regarding the Izzat prior art mentioned with respect to Choon are equally relevant to the combination of Izzat and Benzoni. Thus again Izzat teaches away from combining the inventions of Benzoni and Izzat.

### **3. Claim 24 is independently patentable**

Claim 24 is independently patentable because the cited prior art does not disclose or suggest the claimed feature. Claim 24 is directed to a package wherein the conductive material resides in a hole in dielectric material in the cavity. Clearly, neither Benzoni nor Izzat disclose such a thing, and the examiner has provided no argumentation that the prior art discloses this feature other than to reference features (48) and (50) of the Benzoni figures. However, features (48) and (50) of Benzoni are slots and not holes. Indeed, the examiner recognizes this difference because he has taken the position vis a vis the rejection of claim 23 that Benzoni figure features (48) and (50) are slots. Moreover, Benzoni discloses at col. 3, lines 32-36 that the housing 20 can be held as slots (48) and (50) during plating with a conductive material such as copper. This would suggest to one skilled in the art at the time of the invention that the slots would not be completely covered with a conductive material where they were held and/or that it is not important to cover the slots with conductive material. Therefore, the cited prior art does not disclose or suggest the claim 24 feature and the claim should be allowed.

### **C. The Rejection Of Claims 28-34**

The examiner rejected claims 28-34 over Benzoni in view of Izzat. Of the rejected claims, claims 28 and 34 are independent claims. The examiner maintains that Benzoni discloses all of the features of independent claims 28 and 34 except for a conductive material adapted to be at least partially absorbent to electromagnetic radiation and having a resistivity of between 10-1K ohm/square. The examiner further maintains that Izzat discloses these missing

claim features.

Independent claims 28 and 34 are non-obvious and patentable at least for the same reasons recited above including because:

- The cited prior art does not disclose or suggest a material extending into a cavity. (See sections A(2) and B(2) above).
- The cited prior art does not disclose or suggest a conductive region wherein “the resistivity is arranged to substantially match the wave impedance of an electromagnetic field that would otherwise be expected to exist in the package if the conductive material were not present” of amended independent claims 28 and 34. (See sections A(1) and B(1) above).
- The cited prior art teaches away from the combination of references relied upon by the examiner is rejecting the claims. (See sections A(3) and B(2) above).

For at least these reasons, claims 28-34 are believed to be non-obvious and patentable.

In addition, claim 33 is believed to be independently patentable for at least the reasons cited in Section B(3) above with respect to claim 24.

### **CONCLUSION**

Based upon the amendments and statements in favor of patentability presented above, the applicants submit that all pending application claims are now allowable. Favorable reconsideration and allowance of all pending application claims is, therefore, courteously solicited.

Respectfully Submitted,

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